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**Briefing Paper
on
Real Property Identifiers**

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ACRONYMS

ECIM	Egypt Cadastral Information Management Project
EFS	Egypt Financial Services Project
ESA	Egyptian Survey Authority
GIS	Geographic Information System
GOE	Government of Egypt
KRA	Key Results Area
MOJ	Ministry of Justice
MSAD	Ministry of State for Administrative Development
NLPG	National Land & Property Gazetteer
PIN	Parcel Identification Number
REPD	Real Estate Publicity Department
RETD	Real Estate Taxation Department
UPRN	Unique Parcel Reference Number
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

A well functioning title registration system requires an unambiguous description of the real property object against which all rights and proprietary interests can be recorded. This legal description of the property object most often combines both spatial and textual information to ensure that the object is unambiguously distinguished from contiguous or nearby real property objects.

Descriptive spatial data is customarily provided through an accurate cadastral survey of the property object. These surveys can in turn contain varying degrees of absolute accuracy, but are usually connected to geodetic networks to yield coordinate values for object boundary points and/or centroids. Textual data can include additional descriptive information such as street address, location within administrative regions, etc.

Establishing the link between spatial and textual data is a crucial first step in creating a property registration database and allows value addition of data to other users, both in the public and private sector, but also wider dissemination, sharing and value-added property related information. The introduction of ICT solutions has enabled electronic data sharing amongst multiple users, in both the public and private sector.

Underpinning this integration is the ability to assign each real property object a unique identifier that links multiple datasets. Within Egypt there are currently a number of differing approaches that have been adopted by various government agencies that utilize property identifiers. As a result there is no one unique property identification system in place for national application.

This briefing paper reviews existing property numbering schemes most relevant to property registration in Egypt and outlines international best practice. Three options for a new approach in Egypt are examined and ranked. While providing a 'recommended' solution, this document should be viewed more as a tool for stimulating discussion amongst key Egyptian stakeholders so that some consensus can be reached on the final approach adopted.

1. GUIDING PRINCIPLES

Regardless of the system chosen, a body of previous analysis and findings in the area recommend that, “the parcel identification system should be legally defined and recognized as the official reference to all data for each parcel. It is desirable for all jurisdictions in a state or province to use the same primary system of parcel identification. Because agencies have different needs, various secondary identifiers may also be used to index parcel data; however, all of the secondary identifiers must be cross indexed to the legally recognized, unique parcel identifier, allowing multiple uses of the data”¹.

The American Bar Association also identified a now widely accepted set of six desirable criteria² that should be evaluated when considering property identification systems. They are:

- *Simplicity*
A property unit identifier should be easy to understand, easy to use and reasonably permanent. This will ensure that a new system can be readily adopted by its users, is easy to use and maintain under normal operations, and can be expected to remain in place for a reasonable time.
- *Uniqueness*
An identifier should be assigned to only one real property object and one real property object should be assigned only one identifier to ensure a one-to-one relationship between identifiers and real property objects. This contributes to the system’s simplicity by avoiding misidentification of property unit related data and contributes to its longevity.
- *Accuracy*
Accuracy is pertinent only for those systems that contain some spatial component within the identifier. For example, a system using the coordinates of a property unit centroid in the identifier for a real property object in Cairo could be accurate to the nearest 1m in terms of absolute accuracy.
- *Flexibility*
Any system introduced should be flexible enough to be compatible with various systems already in place and have the ability to be adapted to future advances in technology such as GIS.

¹ National Research Council, 1983, *Procedures and Standards for a Multipurpose Cadastre*, Washington, DC, USA, National Academy Press, p.63

² Moyer et al, 1973, *Land Parcel Identifiers for Information Systems*, American Bar Foundation, Chicago, IL, USA, pp. 600

➤ *Economy*

The costs of real property identifications should be assessed with regards to the initial cost of establishing the system, and ongoing costs for maintaining and updating the system.

➤ *Accessibility*

The parcel identification system should be readily accessible to the various users of property related data, such as the REPD, RETD and municipalities in the case of Egypt. This is an important consideration for whichever agency is designated as custodian of the property numbering system in Egypt. Given ESA's existing role in providing maps and some ownership data to REPD and RETD, it is recommended that ESA be tasked with this responsibility, and that of disseminating up-to-date data to other agencies on a regular basis.

2. PARCEL IDENTIFICATION SYSTEMS – A BRIEF INTERNATIONAL PERSPECTIVE

There are many different parcel identification systems in operation throughout the world, each with its own peculiarities designed to cope with local land-administration conditions. Many countries opt for the simplest approach; assigning a number to indicate the order of registration of a parcel as the parcel identifier, or by establishing grantor/grantee indexes to identify parcels by the name of the seller and purchaser. These approaches, however, have drawbacks because each fails to identify the relative spatial location of the parcel (i.e., where it is physically located), and in the case of the grantor/grantee index, no unique long-term identifier is assigned for each parcel. It is generally accepted that there are four basic categories of a parcel identification system used commonly throughout the world. These are:

2.1 *Hierarchical Administration-based Systems*

- a. *Municipal unit – block – parcel number.* A municipal unit such as a county, city, town, township or municipality is subdivided into blocks and sub-blocks, within which parcels are numbered in some consecutive order. The divisions are often based on existing sub-units such as town blocks or on administrative-territorial boundaries such as those of a parish or village. This approach is scalable with the option to add extra sub-units (e.g., region, state, etc.) depending on which hierarchical level the system's updating is carried out.
- b. *Municipality and street address.* Under this system, the parcel number is made up of the street address of the parcel where a serial number is substituted for the name of the street. While the street address is probably the most widely understood of all identifiers, not all parcels are located alongside a road or have any natural link to a road, especially in rural areas. In addition, streets and roads are not always permanent, affecting the long-term viability of the system.

2.2 *Map & Volume/Folio-based Systems*

- a. *Volume and Folio.* In the Torrens system and the Federal Republic of Germany the parcel number is designated by the volume number of the register and page number in which the parcel details are given. For example, Volume 45 Folio 175 means that the unit is described on the 175th page of the 45th volume. This identification system normally indicates the sequential order of parcel registration within the registration district or the first registration of the parcel. It is a simple system, but apart from the fact that a user can determine that a parcel is located within a registration district, it retains many of the drawbacks of a system based strictly on the order of registration.

- b. *Plan number and unit number.* Under this system the parcel number is determined by the number of the survey plan (according to the date of the survey) with each parcel on the plan being assigned a unique numbered in some consecutive order. An alternative method of numbering is to assign a number for each topographical map-sheet, and then to assign numbers to each parcel on a map sheet in a certain order.
- c. *Hybrid hierarchical/map grid system.* It may also be possible to use a hybrid hierarchical/map grid identifier system. For example, the province and the county could be identified by name or number, while further identification could follow a map grid method. An example of this approach is the Rectangular Land Survey System, predominant in the middle and western parts of the USA and Canada. The system employs a hierarchy consisting of basic map grids in each survey area.

2.3 Spatial Location-based Systems (Geocodes)

This system may be based on latitude and longitude or more conveniently on an independently established national mapping grid system. The use of a grid system requires the adoption of a particular map projection, which will in turn transform measured coordinates on the ground to mathematically derived equivalents on the map projection. If grid coordinates are to be used as a parcel identifier then only one point should be chosen as a geocode. This point is generally the approximate centroid of the parcel, though any other points on the parcel can be chosen if the entire system uses a consistent approach.

2.4 Sequential Numbering Systems

Numbering schemes without some form of reference to parcel location, such as sequential/random numbering systems, have not previously been widely used internationally by agencies to fulfill the role of property identifiers. However, they are increasing in popularity due to their applicability to serve as a primary link between property information datasets maintained by multiple agencies, which also have their own secondary property identifiers in place.

An example of where a sequential numbering system is used at a national level is the National Land & Property Gazetteer (NLPG) in the United Kingdom. As a new property unit (referred to as a Basic Land & Property Unit) is entered into the NLPG it is assigned a sequential number that is then referred to as its Unique Property Reference Number. Information in the NLPG is updated and cross referenced with property data from government agencies such as Ordnance Survey, H.M. Land Registry, Registers of Scotland, Local Government Authorities and the Valuation Office.

3. EXISTING REAL PROPERTY NUMBERING SYSTEMS IN EGYPT

There are a number of parcel identification systems maintained by various government agencies already in place in Egypt. However, clear consistent policies and systems for sharing and linking data, primarily the parcel identifiers, are either not adhered to effectively, or do not exist. This has resulted in the ad hoc application of the various numbering schemes and unreliable information exchange between agencies, which has further added further complications to an already complex system of real property registration.

Development of appropriate property locator systems is one of the most important challenges facing governments around the world. These systems support, not only property registration but, other key government services such as emergency services, postal services, census data collection, etc.

This section provides an overview of the property identification systems adopted by three of the key government agencies in Egypt connected with property registration and would be affected by the adoption of a new approach to this problem. The relatively brief description of these systems is a result of the confusion surrounding real property numbering in Egypt, whether it is through a lack of information or conflicting data. This further highlights the need for the development of a clear, coherent approach to property numbering that is discussed and agreed on by all affected parties.

3.1 Egyptian General Survey Authority (ESA) / Real Estate Publicity Department (REPD)

As the primary source of property location data during the initial title registration phase, ESA is charged with the numbering of real property, as outlined in Chapter 3 of the Executive Regulations for Siguel El-Ainee. These numbers are then used by REPD.

ESA has adopted an approach to the numbering of urban real property objects that, although appearing to have some method, is likely to result in an ad hoc, ambiguous numbering of individual real property objects. In short, if RETD and municipality numbers are provided to ESA surveyors then they are provisionally adopted, using the municipality number as a numerator and RETD number as the denominator.

In the event that the Real Estate Taxation Department (RETD) and municipality numbers are not provided, the surveyor is to follow ESA guidelines on numbering, which are supposed to mirror those of the Municipality. Under this approach, individual real property objects are sequentially numbered according to streets. This requires that each street has its own serial number. The EPOs also generates its own numbering scheme that is applied to units once the fieldwork material is submitted to the office.

The current system is inadequate for uniquely identifying individual urban real property objects. One building examined on a map sheet for Nasr City had three different municipality numbers because it bordered three different streets. RETD and ESA numbers were not included on the map.

ESA does recognize deficiencies within the existing system and is open to suggestions for an improved method of property identification. The Egyptian Cadastral Information Management Project (ECIM) developed a cadastral numbering scheme for adoption in rural areas where initial title registration is implemented. The resultant 12-digit identifier is constructed through numbering of various hierarchical layers according to administrative boundaries. The administrative levels currently referenced in the identifier are Province, District, Village, Hod and Parcel.

ESA is examining the formulation and adoption of a similar structure for identification of real property objects within urban areas so that there might be some consistency for urban and rural areas. One of the shortfalls of the ECIM numbering system, common to all hierarchical-based numbering systems, is its ambiguous set of rules for dealing with the scenario of shifting, splitting, or creation of new administrative boundaries.

3.2 Real Estate Taxation Department (RETD)

The Central Department for Information Systems under the Real Estate Taxation Department is responsible for the consolidation of object data collected at district level ("Ma'amoreya") into a central database. Recent prototype activities undertaken by EFS have shown the RETD numbering systems to be very similar to those used by ESA. There is disjointed application however, and different systems according to district location were also found.

Revenue Administration ("Ma'amoreya") at the district level in Nasr City is based on Sheyakha, whereby each Sheyakha contains a number of blocks which in turn sits above a number of land parcels. The number for a land parcel appears on the 1:500 scale hardcopy map as a fraction. For example, 1/15 represents parcel number 1 in block 15, where parcel numbers are assigned sequentially with odd numbers on one side of a street and even on the other. In Maadi the hierarchy is different than in Nasr City and parcel numbers were assigned single numbers only on the map as the block did not exist in this case.

The schemes described for Nasr City and Maadi are manual systems. RETD is introducing a new scheme to support its digital database environment. The scheme to be used under the new DB environment is outlined below.

GOVERNORATE	POLICE DISTRICT	RETD DISTRICT	SHEYAKHA	STREET	BUILDING - APARTMENT
00	00	000	00	000	00 - 00

Table 1: New RETD Numbering Scheme

Note: There are plans to expand the apartment number to three digits to handle scenarios where more than 100 units may exist in one building.

The scheme shown above is a hierarchical system based on the administrative boundaries of different administrative bodies (i.e. police, RETD, Municipality), which means there is no consistency in the division of administrative territories. For example, one RETD district may extend into more than one police district, or a Sheyakha may be split between two or more RETD districts.

The new scheme is more unstable than most hierarchical schemes due to the number of administrative bodies whose boundaries contribute to the construction of the scheme. It is only used in urban areas. A more traditional hierarchical system, which basically mirrors that used by ESA, is being used in rural areas.

4. OPTIONS FOR A UNIQUE PARCEL IDENTIFICATION NUMBERING SYSTEM IN EGYPT

As outlined in this paper, there are already a number of property identification systems being used by various agencies such as ESA, RETD, and Municipalities. The adoption of a new, more structured and coherent property locator scheme would in no way preclude these agencies from using their existing numbering schemes as secondary identifiers if they choose to keep them.

The introduction of a primary property identifier that could act as the primary key to link databases and property information of multiple agencies will be an undertaking that requires increased levels of cooperation and data sharing amongst these affected agencies. This is the only way to ensure completeness, accuracy and consistency of property-related data.

The mass scale property registration activities planned for Greater Cairo present a unique opportunity to design an appropriate property locator system for implementation in urban areas prior to implementation of field activity. This should be a priority issue addressed by Ministry of State for Administrative Development (MSAD) and other agencies as soon as possible.

It is understood that MSAD has formed a committee tasked with identifying the most appropriate property identification system for Egypt. Although this is a positive step, the committee has met only once, and it is not clear exactly what the output of the committee is expected to be. The mandate of the committee may go well beyond just that of identifying a unique property identification number, to include establishing a new approach with regards to property addressing in Egypt. ESA is one of the agencies represented on this committee, as are RETD, REPD, municipalities, the Egyptian Postal Service and several other key agencies.

This following section outlines the three most relevant numbering scheme options identified by EFS. Brief descriptions of the advantages and disadvantages of each are provided. Discussions on comprehensive property addressing systems are outside the scope of this paper.

4.1 Spatial Identifier (Coordinates)

“There is increasing use of GIS technology, satellite positioning systems and other electronic position-fixing devices that are capable of determining and processing data relating to the location of points to high levels of accuracy. There are many advantages to having a real property address system that includes some form of geographic reference since this facilitates spatial data analysis.

The most common spatial referencing system uses a regular grid with rectangular Cartesian coordinates. The coordinates of the corner of any real property boundary can then be given in terms of ‘x’ and ‘y’ and the whole boundary of a parcel described by a string of (x, y) coordinates. In some countries it is the convention to use ‘x’ to measure north and ‘y’ to measure east while in others the opposite is the case. A whole parcel can be given a reference by choosing one point within it, for example its centre, sometimes known as the seed point³.

Such a system for adoption in Egypt could retain the following appearance:

LAND PARCEL ID	BUILDING ID	APARTMENT UNIT ID
XXXXXXXXXX	00	000

Table 2: Possible structure of a location-based identifier.

LAND PARCEL ID – The centre (centroid) or some other boundary point (e.g. South East corner) of the land parcel would have an absolute location-based identifier that consists of components of its Cartesian coordinate values. These would only need to be rounded to the nearest meter. Easting values would be represented by “X” and Northing values by “Y”.

BUILDING ID - Where additional individual real property objects exist such as buildings or apartments, they could be represented through a suffix to the land parcel identifier. It is recommended that a building suffix sit between land parcel and apartment unit numbers to accommodate scenarios where more than one building may sit on the land parcel. Although this scenario is not permitted under current legislation, restrictions on the number of buildings on a land parcel may be lifted or relaxed so the numbering system should be flexible enough to adapt to this scenario.

APARTMENT UNIT ID - Apartment unit suffixes should not need more than 3 digits to accommodate larger apartment developments and commercial buildings.

³ United Nations – Economic Commission for Europe, 2004, *Guidelines on Real Property Units & Identifiers*, UNECE Information Service, Geneva, Switzerland, pp.43-44

Since the system proposed consists of coordinates, it is recommended that the NED-95 be adopted as the geodetic datum from which these coordinates would be derived. The adoption of this datum should also be the norm for cadastral surveying and mapping, at least within urban settings initially. This is likely to be one source of potential problems with a location-based identifier. ESA has not yet fully committed itself to using NED-95 as the datum for cadastral surveying and mapping. Use of the Old Egyptian Datum as the basis for this scheme makes no sense if NED-95 may be adopted at some stage in the future.

Such a numbering system would meet simplicity criteria given its link with the coordinate-based location of property units. This location-based approach also ensures uniqueness if adequate levels of accuracy are achieved during the initial data capture phase, which is more likely than not. One scenario that may cause problems is where a parcel is subdivided, but one of the 'child' parcels still has the same centroid. An option for dealing with this scenario is assigning 'parent' parcel status to the parcel that retains the same centroid.

One would also assume that the cost of introduction and maintenance of location-based system would not be prohibitive, especially given that much of the required data for its introduction would be collected during the large-scale mapping activities anyway. And, although identifiers with large numbers of digits (>10) may face difficulties fitting on hard copy index maps, the prevalence of modern ICTs in managing registration and cadastre systems would virtually nullify this constraint.

The diagram below gives an overview of how the numbering scheme may appear, firstly for a land parcel, then a land parcel with a building, ending with numbering of an individual apartment/commercial unit. The purpose of the figure is to provide an overview only. Exact protocols, if any, on how to number individual units within multi-floor buildings, etc. would have to be defined as an integral component of the numbering system's overall design. One option is to simply have sequential numbering on buildings and apartment units connected to the land parcel.

In the event a spatial identifier is not chosen as the primary property identifier, it is recommended that the coordinates of the parcel centroid, or some other boundary point, be included in property description information as a secondary identifier.

1. LAND PARCEL IDENTIFIER			REAL PROPERTY OBJECT ID: XXXXXXXXYYY
			REAL PROPERTY OBJECT ID: XXXXXXXXYYY-01
			REAL PROPERTY OBJECT ID: XXXXXXXXYYY-01-001

Table 3: Spatial Identifier Parcel Numbering Scheme

4.2 Hierarchical - Administrative Region-based Identifier

Hierarchical numbering of real property units according to the boundaries of administrative regions, or some hybrid approach incorporating administrative boundaries, is perhaps the most prevalent property numbering system adopted internationally. It is also the approach currently adopted for registration in Egypt's rural areas.

In contrast to Egypt though, many countries using this system have well-established policies and practices for delineating administrative boundaries. The experience of the EFS project in Cairo is that there is no consistently followed policy or procedure in this regard. The geographic locations of administrative boundaries in Greater Cairo are not clear.

Such uncertainty will ultimately affect property registration if the unique identifier forms a part of the legal description of the property unit. It is, therefore, important that the division of administrative boundaries be transparent, unambiguous, relatively permanent, and widely publicized throughout government and the wider community. This will require that clear direction and processes be set down by the Government of Egypt to clarify, update and fix administrative boundaries across Egypt. This will of course require the production and dissemination of a comprehensive set of index maps.

The fixing of administrative boundaries to a reasonably permanent state will bring some degree of certainty to property numbering. However, a system based on administrative boundaries will always be at the mercy of mutation of existing boundaries and/or creation of new hierarchical units. This is especially pertinent for Greater Cairo where development of new communities is likely to necessitate the creation of new hierarchical units, such as a new "city".

Another problem connected with a hierarchical system in Egypt is the different naming conventions used in urban and rural environments. For example, a rural "district" is at the same administrative level as an urban "city/town", while an urban "district" is the equivalent of a rural "village". If a hierarchical system is to be used in Egypt it is recommended that a new naming convention be introduced that encompasses both urban and rural environments. An initial suggestion for a new naming convention is presented in Table 3. This simplified table does not cover all administrative or territorial units that might exist in Egypt.

The structure of a potential hierarchical-based system using the proposed terminology is shown below in Table 4. The term "Cadastral Neighborhood" was introduced to address the possibility of large numbers of "Cadastral Blocks" (Blocks & Hods) that would normally fall under the "Cadastral Section" (Districts & Villages).

Administrative Level	Name	Existing Urban Territorial Unit	Existing Rural Territorial Unit	Number of Digits
1	Governorate	Governorate	Governorate	2
2	Cadastral Zone	Town / City	District	2
3	Cadastral Section	District	Village	2
4	Cadastral Neighborhood	-	-	2
5	Cadastral Block	Block	Hod	2
6	Land Parcel	Parcel	Parcel	2
7	Property Unit	Apartment	-	3

Table 4: Possible naming convention for hierarchical delineation of property numbering

GOVERNORATE	CADASTRAL ZONE	CADASTRAL SECTION	CADASTRAL NEIGHBORHOOD	CADASTRAL BLOCK	LAND PARCEL	PROPERTY UNIT
00	00	00	00	00	00	000

Table 5: Proposed structure for hierarchical administrative boundary-based identifier

GOVERNORATE: The numbering of Governorates has already been undertaken by ESA, so it is recommended that these existing numbers be used.

CADASTRAL ZONE: Cadastral Zone would be the term assigned to the administrative hierarchical level that encompasses the administrative regions currently referred to as 'Town/City' in urban areas and 'District' in rural settings.

CADASTRAL SECTION: Cadastral Section would be the term assigned to the administrative hierarchical level that encompasses the administrative regions currently referred to as 'District' in urban areas and 'Village' in rural settings.

CADASTRAL NEIGHBORHOOD: Cadastral Neighborhood would be the term assigned to a new administrative hierarchical level that is not currently used in urban areas or rural settings. The introduction of the term is recommended, to address the possibility of large numbers of "Cadastral Blocks" (Blocks & Hods) that would normally fall under the "Cadastral Section" (Districts & Villages).

CADASTRAL BLOCK: Cadastral Block would be the term assigned to the administrative hierarchical level that encompasses the administrative regions currently referred to as 'Block' in urban areas and 'Hod' in rural settings.

LAND PARCEL: Land Parcel would be the term assigned to the administrative hierarchical level that encompasses the administrative regions currently referred to as 'Parcel' in urban areas and 'Parcel' in rural settings.

PROPERTY UNIT: Property would be the term assigned to the administrative hierarchical level for numbering of individual buildings and/or apartments. In a commercial setting the number could also be used for the numbering of individual shops or office space.

One distinct advantage of the system is the similarity between it and the approach adopted by ESA in the numbering of properties under title registration in rural areas. The adoption of this system would require minimal amendments to existing legislation, unlike other vastly different approaches. Once fixed, it would also be quite easy to create a series of property identification indexing maps at the various hierarchical levels. If adopted however, it is crucial that legislation is amended to provide clear definition of terminology used and how numbers are assigned initially, by whom, and how they are updated in the event of changes to administrative boundaries.

If such a numbering system does not serve, or goes beyond, the needs of other agencies requiring property identification data, it would be possible to have this identification as a secondary cadastral identifier for ESA use. The creation of cadastral numbering index maps could still proceed under this scenario.

4.3 Sequential Numbering-based Identifier

If the purpose of the new property identification is to act simply as a primary identifier that links multiple secondary identifiers already maintained by multiple agencies, then a sequential numbering system is perhaps the most appropriate. Although sequential numbering systems do not generally contain an element of spatial location, it would be possible to add a prefix to give some indication of which administrative region it exists in. In Egypt this could be a two-digit prefix that indicates the Governorate that the property is located in.

A possible structure for a hybrid sequential number-based identifier is presented in the table below.

GOVERNORATE ID	SEQUENTIAL NUMBER
00	00000000

GOVERNORATE ID: The numbering of Governorates has already been undertaken by ESA, so it is recommended that these existing numbers be used.

SEQUENTIAL NUMBER: The assigning of sequential numbers could occur at the time of initial title registration under mass scale land titling programs, both urban and rural. Given the large amount of data collected on all properties during this phase it would be the optimal period for introducing new numbers and linking multiple agency identifiers. For those areas already registered it would be possible to assign the numbers at the time of the next transaction of the property.

The numbering scheme outlined above has two key drawbacks. First, by including the Governorate ID as a prefix, the system is exposed to the most common problem facing a numbering-based identifier on administrative areas. Although Governorate is the highest administrative division (beneath country) the boundaries of Governorates may also change. For example, there are discussions currently underway to amend and update the location of the boundaries separating Giza and Beni Suef Governorates.

The other key drawback that many will highlight is the inability to have some indication of the parcel location in space by looking at the property identifier. This brings us back to the discussion on what the purpose of the new property number would be used for. EFS is proposing a new number that can serve as a primary property identifier and be used as the link between the property-related information from multiple agencies that currently collect and store various data on real property. These agencies already use some form of property ID that can remain in place as

secondary identifiers that can then be linked to multiple agency records through this new property number.

5. RECOMMENDATIONS

1. EFS recommends the adoption of one national numbering/identification system for application and use in property registration throughout Egypt. Consequently, the adopted system would apply to both rural and urban areas, and identify all registered commercial, private and state-owned property. It is recognized that the introduction of a new system is a large, long-term undertaking, especially in areas where title registration has already been introduced.

2. EFS recommends the hybrid sequential-numbering scheme based on a Governorate ID prefix and a sequential number generated for each real property object (Section 8.3). Analysis of the scheme is presented below.

Criteria	Score	Analysis of advantages and disadvantages
Uniqueness	5	Each parcel and immovable property object is assigned a unique number. The proposed system recognizes the importance of permanency when assigning numbers to avoid duplication and confusion due to changes in property-object numbers. The proposed system contemplates a sufficient reserve of cadastral numbers to accommodate the development of land in the future. It is unlikely that there will be more than 99,999,999 property objects in Cairo Governorate.
Simplicity	5	The proposed property-numbering system is based on a simple sequential numbering concept. Ongoing assignment of numbers through property object creation or mutation can be automated with modern automated registration and cadastre systems.
Accuracy	2	The parcel number does not include spatial coordinates and characteristics of the parcel and for this reason, there is no direct spatial relationship between the property number and its spatial location, apart from Governorate.
Flexibility	4	The system contemplates growth and development of the land market, making it flexible for future use. It assigns one unique cadastral number that accounts for each real-property object. It is flexible enough to adapt to the introduction of modern LIS/GIS technologies.
Economy	3	The proposed system is simple, logical, and easy to administer. Initial costs to implement the system are minimized by adopting a day-forward numbering approach. Future operating costs can be minimized by the effective and efficient use of computer technology, including the creation of digital maps and other geospatial datasets.
Accessibility	3	Initial implementation will be straightforward, however, it will be important to link the new number with existing datasets to improve accessibility of property-related data for government agencies and the wider public.
Total score	22/30 (73%)	

With initial title registration ongoing in some remaining rural locations, and the planned roll out in urban areas in the very near future, it is recommended that a day-forward introduction of the new numbering system be adopted initially. One option for introduction of a new system in already titled areas could be a transaction-based

approach where the property is assigned its new unique identifier at the time of the next transaction affecting it.

6. CONCLUSION

The Executive Regulations of Law 142/1964, which governs the *Sigueal el-ainee* (title) system, clearly define the basis for assigning unique property identifiers in Egypt. However, there are different numbering conventions in place for rural and urban settings, and there is clear inconsistency in terms of how these numbers are assigned at the field level. For Egypt, it will be important that information on private land rights be accessible and open to the public.

Without open public records for real property, as part of an overall improved property registration system, it is not likely that the number of formal real property transactions will increase. However, to have a useable system of public records on land parcels, there must be some infrastructure in place that will provide the necessary informational links between maps and databases on ownership and other legal rights.

Property identifiers are an integral component of the legal descriptions of real-property units. However, the legal description only identifies the object of private ownership - the immovable real-property object. More data is needed to have complete information on the rights to a land parcel. A real property numbering scheme, which assigns a unique identifier to each property object, links the spatial data (geographic location, size, etc.) of the property object to the personal data of the owner and any other holders of rights or interests in the land.

Unfortunately, the use of legal descriptions by the public on a daily basis to link these two fields of information is not practical, cumbersome in its application, and confusing to the layperson. For daily usage and ease of maintaining public records, a unique number is used to access all information on the real property object. This number distinguishes the property object from every other property object, creating an orderly system by which land records are maintained. Therefore, from the perspective of protecting legal ownership rights, it is best that a property identification system, which assigns a unique identifying number to each land property object, be adopted and implemented.

The system for real property identification in Egypt, especially with regards to property registration, is not adequate in its current form. The adoption of a new numbering scheme will require broad stakeholder buy-in coupled with necessary regulatory reform and practical implementation.

The purpose of this paper was to review existing numbering schemes, present international trends, and outline options for a new scheme within Egypt. In order to stimulate discussion amongst stakeholders, a preferred option was also put forward by the EFS project. It is now up to the Government of Egypt to decide whether a new property numbering system is introduced and what form it takes.

ANNEX 1 BACKGROUND & SCOPE

Task 2 of the EFS project is charged with “Improving Operations of Urban Real Property Registration Systems”. The key objective of Task 2 is to develop a preparatory title registration system in two urban areas in collaboration with the Ministry of Justice (MoJ), Ministry of State for Administrative Development (MSAD) and the Egyptian General Survey Authority (ESA).

The scope of the discussion on real property identifiers in this document is limited to the context of what is needed as part of the overall improvement to operations of real property registration systems. For example, it does not examine wider issues connected with real property identification such as national addressing systems, which, although important in property identification, are secondary to the establishment of a primary unique property identification number.

The mass scale property registration activities planned for Greater Cairo present a unique opportunity to design an appropriate property locator system for implementation in urban areas prior to implementation of field activity. This should be a priority issue that is addressed by GOE as soon as possible.